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STUDY OF ACHIEVEMENT: AN OUTLINE OF A LONGITUDINAL STUDY FROM JUNIOR KINDERGARTEN THROUGH THE ELEMENTARY GRADES.

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This 1964 report briefly describes a large-scale longitudinal study to assess the achievement of all students who entered the Toronto school system in either junior kindergarten (1960) or senior kindergarten (1961). To assess the effect of kindergarten on the students' later school achievement, and to examine the nature of school failure, it was planned that this population would be followed at least through grade 6. Measurement instruments would include standardized intelligence tests, a behavior rating questionnaire, a draw-a-classroom test, and a test of creativity. Information on the students' family background would be gathered through personal or telephone interviews. No data on the students' actual achievement are presented. (LB)

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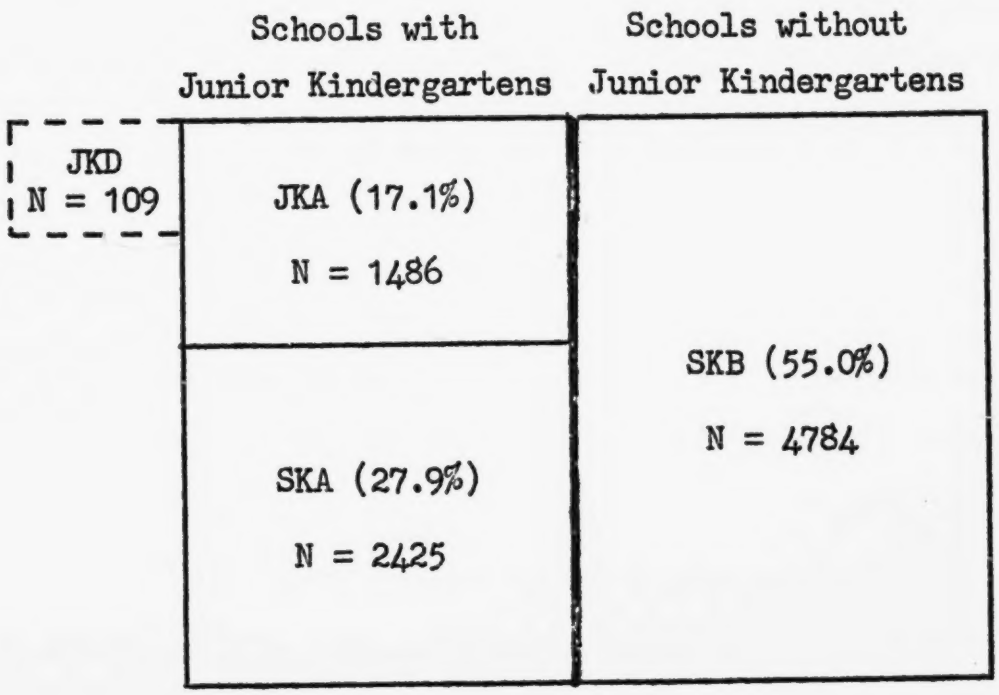
In 1960, the Study of Achievement was inaugurated in Toronto schools. It is a longitudinal study of all those students beginning school in this system in either Junior Kindergarten (1960) or Senior Kindergarten (1961). It is difficult to pin-point the genesis of this study. Discussions about the "underachiever", "talented" students who were not "gifted", and similar topics raised questions about the nature of achievement. What is achievement? What should be considered under this broad heading? In evaluating achievement, education has traditionally placed a major emphasis only on academic achievement. Frequent reference however is made to other areas such as social and emotional development, and it is assumed that achievement is possible in these and other areas.

A more pragmatic concern centered on the Junior Kindergarten programme. For many years, Toronto has provided kindergartens for all children who will have reached their fifth birthday by December 31 of the year that they register. Toronto has also provided Junior Kindergartens in selected school districts, for four-year-olds; these children have a two-year kindergarten programme -- a year in Junior Kindergarten and a year in Senior Kindergarten. Only children living in an appropriate school district are eligible and even within a district, there are not sufficient teachers or classrooms to accommodate all potential applicants; priority is given to older students. The question of whether Junior Kindergartens should be curtailed or extended to all districts was obviously closely related to the achievement of these children.

From these concerns and similar issues which were less explicit in the minds of the inquirers, the Study of Achievement arose. It was conceived as a large-scale longitudinal study to examine learning as an on-going process, the nature of achievement and the causes of success and failure in school; to create a greater awareness of the differences and similarities in children, and to clarify understanding in the growth of mental processes in specific areas (e.g. language and mathematics). In spite of the massiveness and the care taken in undertaking this study, it is in many respects only a pilot investigation because much new ground is being broken.

In the school year 1960-61 the study began, incorporating all those students who were attending Junior Kindergarten that year. The following year (1961-62) the rest of the students in Senior Kindergarten were added (see Figure 1). This basic population is being followed and studied. Students who have been retarded one or more years, those who have been accelerated, and those who have been placed in special classes are retained in the study. No students are added to the basic population to compensate for attrition, however, on some measures all students are tested, providing grade norms.



JKA - Senior Kindergarten students who attended Junior Kindergarten the previous year.

SKA - Senior Kindergarten students who did not attend Junior Kindergarten the previous year but who lived in a school district where there was a Junior Kindergarten.

SKB - Senior Kindergarten students who had no opportunity to attend Junior Kindergarten.

JKD - Students who attended Junior Kindergarten the previous year but who transferred out of the system before entering Senior Kindergarten.

Figure 1. Basic population in the Study of Achievement, N = 8695.

One major problem in the study is that of mobility and attrition. Reasonably successful techniques have been devised to follow all the students, as they move from school to school within the City of Toronto. Any student who leaves the City of Toronto school system however, is lost to this study (see Table 1).

Data collection can be concisely described (see Table 2), but it would take many pages to indicate the richness of this data.

TABLE 1

ATTRITION IN THE STUDY OF ACHIEVEMENT AS OF OCTOBER, 1963 (GRADE 2)

Category	Number of Cases	Per cent of Initial Population
Initial Population (1961-1962)	8695	100.00
Deceased, Excluded, Sanitorium, Children's Aid	17	.20
Transferred to Private Schools	29	.33
Transferred to Separate Schools	564	6.49
Transferred to another school system inside Metropolitan Toronto	765	8.80
Transferred to another school system outside Metropolitan Toronto	439	5.05
Total leaving Toronto system	1814	20.86
No Trace[i]	133	1.53
Number remaining in study	6748	77.61
Number not in Grade 2	681	10.09[ii]

i Procedures for tracing were established in the Spring of 1963. These students could not be located or could not be identified, e.g., same sexed twins with the same initials.

ii Expressed as a percentage of those remaining in study.

TABLE 2

DATA COLLECTED BY JUNE, 1964

Type of Data	Date(s) of Collection	Subjects[i]
Background Information	Fall, 1960	JKA
	Fall, 1961	SKA and SKB
Draw-a-Classroom	March, 1961	JKA
	April, 1961	JKA
	March, 1962	JKA, SKA and SKB
	May, 1962	JKA, SKA and SKB
	April, 1963	JKA, SKA, SKB and other Grade 1 students
	February, 1964	JKA, SKA, SKB and other Grade 2 students
Rating Questionnaire	May, 1962	JKA and SKA
	May, 1963	JKA, SKA and SKB
	April, 1964	JKA, SKA and SKB
Metropolitan Achievement Test	June, 1963	JKA, SKA, SKB and other Grade 1 students
	May, 1964	JKA, SKA, SKB and other Grade 2 students
Otis I.Q.	October, 1963	JKA, SKA, SKB and other Grade 2 students
Test of Creativity	March, 1964	JKA, SKA, SKB and other Grade 2 students

i Refer to Figure 1 for abbreviations.

When each student was registered at school, some forty items of background data were collected by the Kindergarten teacher either through personal interview or by telephone. The data include occupation, education, race, religion, languages spoken and country of birth of the parents. The kind of family dwelling, number of rooms, size of family, number of older brothers, older sisters, younger sisters, younger brothers and the number of grandparents living with the family unit, represent additional types of information. The data are remarkably complete, e.g., the occupational status of the father is reported for 93.8% of the subjects.

The rating questionnaire was constructed to cover the categories of Language, Mental, Social, Emotional and Physical "achievement". Each item was prepared to evaluate performance in a specific activity such as attending to a lesson or accepting responsibility for an assignment. A detailed description of relevant behaviour was included for each level along a five-level scale. A form of the Questionnaire has been constructed for each grade level in relation to both development and curriculum. Although the Grade two Questionnaire has only twenty-seven items, and although all responses are tabulated directly on IBM cards, an experienced teacher must spend half an hour to rate a single student.

The test of creativity is a modification of the Circles Test developed by Torrance. Responses to the circles are examined in terms of fluency, flexibility, originality and detail.

The Draw-a-Classroom test is a new instrument that will be described in detail at the Third Canadian Invitational Conference on Educational Research. The child is given paper and crayons and is simply asked to draw his classroom! He then describes his picture and his words are recorded on the face of the drawing. These drawings appear

to be an amazingly fruitful source of data. They provide information about the development of both a child's conceptual and perceptual framework. The basic guideline in gauging this development is that of classroom constants including space, persons and objects. The child must deal with space, the space on the paper, the classroom as a unit of space, the floor and the ceiling as spatial limits, etc. All classrooms contain a teacher, the child himself and children of both sexes. The "artist" may include any combination of these persons, in isolation or interacting with others. There are objects, such as windows and lights found in all classrooms. The child must select, organize and present in his drawing both objects and people arranged in space. Ninety specific areas, each containing from two to nine categories have been identified.

The Achievement and Intelligence tests need no comment at present. By the end of June, 1964, 600 separate items of information will have been collected on each subject. Most of these variables consist of discrete categories, e.g., country of birth, type of occupation, presence or absence of teacher in the drawing of the classroom, etc. Forty-five are continuous variables such as the results of the standardized tests and the rating questionnaires. The continuous variables provide a range of scores that are distributed normally and it is possible to compute their averages; for the categorical variables it is only possible to tabulate frequency of occurrence, e.g., number of boys and number of girls. Many of the variables can be combined to yield new variables, e.g. family size with number of rooms can yield a measure of density or crowding in the home.

The extensive data make carefully controlled sub-studies possible within the major context and several such projects are under

way. At present major efforts are being directed toward maintaining the study, coding and tabulating the data as well as undertaking initial analyses. A description of the basic population in terms of background variables will soon be available from the Research Department. Some analyses related to the instruments themselves are also under way. Following this it will be possible to investigate the "effects" of Junior Kindergarten on later school achievement. At present no priorities have been assigned to the multitude of other questions which could be studied with this data.

Attrition may well determine the length of the study, although it is always possible to reconstitute a new population by establishing a whole grade as a new base line. While the wildest dreams would carry this study to the end of high school, even under the most unfortunate circumstances, it is planned to follow this initial population at least to the conclusion of Grade six.